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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SANDPIPER CDN, LLC,
Patent Owner.

IPR2025-00826
Patent 9,021,112 B2

Before MITCHELL G. WEATHERLY, SHEILA F. McSHANE, and MICHAEL T. CYGAN, *Administrative Patent Judges*.

CYGAN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Google LLC. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–23 of U.S. Patent No. 9,021,112 B2 (Ex. 1001, "the '112 patent"). Paper 1 ("Pet."). The Petition is supported by a Declaration from Dr. Todd C. Mowry. Ex. 1008 ("Mowry Declaration"). Sandpiper CDN, LLC. ("Patent Owner") filed a Preliminary Response to the Petition. Paper 8 ("Prelim. Resp."). Patent Owner's Preliminary Response is supported by a Declaration of Dr. Samuel Russ. Ex. 2013 ("Russ Declaration"). The proceeding was referred to this panel by the Acting Chief Administrative Judge for determination of whether to institute trial under 35 U.S.C. § 314. Paper 14.

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2023). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." For the reasons given below, on this record, Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one of challenged claims 1–23 of the '112 patent. Accordingly, we institute an *inter partes* review of the '112 patent.

B. Real Parties-in-Interest

Petitioner identifies itself as a real party-in-interest. Pet. 82. Patent Owner identifies itself as a real party-in-interest. Paper 4, 1.

C. Related Matters

The parties represent that the ’112 patent is involved in *Sandpiper CDN, LLC v. Google LLC*, 2- 24-cv-03951 (CDCA) May 10, 2024. Paper 4, 1; Pet. 82.

D. The ’112 Patent

The ’112 patent is titled “Content Request Routing and Load Balancing for Content Distribution Networks.” Ex. 1001, code (54). The ’112 patent issued on April 28, 2015, from Application No. 12/050,648, filed on March 18, 2008, and is a division of U.S. Application No. 09/982,721, filed on October 18, 2001. *Id.* at codes (21), (22), (63). The ’112 patent relates to “[a] content distribution mechanism that distributes content of a content provider at various sites across a network and selects the site that is nearest a content requestor using an anycast address that resides at each of the sites,” which “are configured as nodes [that] include a content server and a DNS server.” *Id.* at code (57). “The DNS servers are associated with the content servers at their respective nodes as to resolve the name of the content provider to the IP address of the content servers at the nodes.” *Id.* “The DNS servers each are assigned the anycast address in addition to a unique address.” *Id.*

E. Illustrative Claim

Claim 1 is representative of claims 1–12, and recites as follows:[1]

> 1. [1p] A method of content delivery in a network, the method comprising:

[1] Bracketed organization added as per the Petition and Preliminary Response. Pet. viii; Prelim. Resp 16 n.1.

> [1a] (A) providing a plurality of Domain Name System (DNS) servers associated with a Content Delivery Network (CDN), said plurality of CDN DNS servers sharing a common anycast address, wherein each CDN DNS server is associated with a respective plurality of content servers;
>
> [1b] (B) causing said plurality of CDN DNS servers to be authoritative for a hostname associated with a content provider by causing said common anycast address to be associated with said hostname;
>
> [1c] (C) responsive to a request for content associated with the content provider and issued by a client, said request including at least said hostname,
>
> > [1d] (cl) causing said hostname to be resolved to said common anycast address by an Internet Service Provider (ISP) DNS server; and then
> >
> > [1e] (c2) by one of said plurality of CDN DNS servers, resolving said hostname to identify an IP address for use by the client to retrieve the content from a content server.

Ex. 1001, 8:63–9:18.

Claim 13 is illustrative of claims 13–23, and recites as follows: [2]

> 13. [13p] A method of content delivery for delivering content on behalf of a plurality of content providers, the method comprising:
>
> [13a] (A) providing a plurality of Domain Name System (DNS) servers, said plurality of DNS servers sharing a common anycast address, wherein each DNS server is associated with a respective plurality of content servers;
>
> [13b] (B) configuring each DNS server and respective plurality of content servers to support content delivery for a plurality of content providers, wherein each of the plurality of

[2] Bracketed organization added as per the Petition and Preliminary Response. Pet. x–xi; Prelim. Resp 16 n.1.

content providers has a respective hostname associated therewith;

[13c] (Cl) responsive to a first request for first content associated with a first content provider of said plurality of content providers, said first request including at least a first hostname associated with the first content provider,

[13d] (c11) by a first DNS server of said plurality of DNS servers, resolving said first hostname to identify a first IP address to be used for retrieval of the first content from a first content server of said content servers associated with said first DNS server;

[13e] (c12) by a switch associated with said resolving DNS server of step (c11), selecting the first content server from said respective plurality of content servers associated with the DNS server of step (c11); and

[13f] (c13) attempting to serve said first content from the first content server; and

[13g] (C2) responsive to a second request for said first content associated with said first content provider of said plurality of content providers, said second request including at least the first hostname associated with the first content provider,

[13h] (c21) by a second DNS server of said plurality of DNS servers, resolving said first hostname to identify a second IP address for retrieval of the first content from a content server associated with the second DNS server;

[13i] (c22) by a switch associated with said resolving DNS server of step (c21), selecting the second content server from said respective plurality of content servers associated with the DNS server of step (c21); and

[13j] (c23) attempting to serve said second content from the second content server.

Id. at 9:54–10:30.

F. Evidence

Petitioner relies on the following patent document evidence.

Name	Patent Document	Exhibit
Glines et al. "Glines"	WO 01/39470 A1	1002[3]
Gupta et al. "Gupta"	US 6,405,252 B1	1003
Chung et al. "Chung"	US 6,470,389 B1	1004
Chiou et al. "Chiou"	US 6,792,507 B2	1005
Colby et al. "Colby"	US 6,006,264	1006

G. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–23, including independent claims 1, 13, 18, 19, 21, 22, and 23 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–8, 10–23	103(a)[4]	Glines
1–8, 10–23	103(a)	Glines, Gupta
4	103(a)	Glines, Chung
4	103(a)	Glines, Gupta, Chung
7–9, 19–20	103(a)	Glines, Chiou
7–9, 19–20	103(a)	Glines, Gupta, Chiou
10–22	103(a)	Glines, Colby
10–22	103(a)	Glines, Gupta, Colby
19–20	103(a)	Glines, Chiou, Colby
19–20	103(a)	Glines, Gupta, Chiou, Colby

[3] We vary from our typical practice of referring to the page number of the Exhibit and instead refer to the page number of the underlying document, to match the usage of the parties and prevent confusion.
[4] We apply pre–AIA 35 U.S.C. § 103(a) to the '112 patent because it was filed before March 16, 2013. Ex. 1001, codes (22), (62); Pet. 6.

II. ANALYSIS

A. Legal Standards

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, "would have been obvious at the time the invention was made to a person having ordinary skill in the art [to which said subject matter pertains]." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness.[5] *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art ("POSITA") at the critical time "would have had at least a bachelor's degree in computer science, electrical engineering, or a related field, and at least two years of work or research experience in the field of content delivery management or networks," and that "additional education could substitute for work experience." Pet. 3 (citing Ex. 1008 ¶¶ 51–53). Patent Owner does not provide any such assessment in its Preliminary Response. Prelim. Resp. 11. For purposes of this Decision, we adopt Petitioner's proposed level of ordinary skill, as it appears to be consistent with the specification of the '112 patent and the prior art of record.

[5] Neither party presents evidence or arguments regarding objective evidence of non-obviousness at this stage of the proceeding.

C. Claim Construction

In an *inter partes* review, we construe a patent claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b)." 37 C.F.R. § 42.100(b). Under this standard, the words of a claim generally are given their "ordinary and customary meaning," which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Neither party proposes any express claim construction at this stage of the proceeding. Pet. 3; Prelim. Resp. 12. Based on the record before us, we determine that no claim term requires express construction for purposes of this Decision.

D. Obviousness over Glines

Petitioner asserts that claims 1–8 and 10–13 are unpatentable under 35 U.S.C. § 103 as obvious over Glines. Pet. 7. Patent Owner argues against this assertion. Prelim. Resp. 16.

1. Glines

Glines is titled "Optimal Request Routing by Exploiting Packet Routers Topology Information." Ex. 1002, code (54). Glines relates to a "technique for redirecting client computer requests for content files to the closest replica of the requested content, by using anycast messaging." *Id.*, code (57). A request to resolve a domain name is forwarded to a group of network-distributed name servers, and the closest name server responds to the anycast message by returning a unique network address for the content server that is topologically closest to the client computer. *Id.*

2. Analysis of Claim 1

We begin our analysis of Petitioner's obviousness contentions with Petitioner's assertions as to claim 1.

> *[1p] A method of content delivery in a network, the method comprising: [1a] (A) providing a plurality of Domain Name System (DNS) servers associated with a Content Delivery Network (CDN), said plurality of CDN DNS servers sharing a common anycast address, wherein each CDN DNS server is associated with a respective plurality of content servers; [1b] (B) causing said plurality of CDN DNS servers to be authoritative for a hostname associated with a content provider by causing said common anycast address to be associated with said hostname; [1c] (C) responsive to a request for content associated with the content provider and issued by a client, said request including at least said hostname,*

Patent Owner does not contest Petitioner's assertions as to limitations [1p]–[1c]. Prelim. Resp. 16–18. Petitioner asserts that these limitations are taught by Glines's redirection of client requests for content to the closest replica of requested content by anycast messaging, through internetwork 30, content delivery network DNS servers 53 sharing anycast address 50.100.20.1 and each attached to multiple content servers 51, wherein each of DNS 53 is authoritative for its hostname "example.com," and root DNS server 38 returns the anycast address and provides a content server IP address so that the user may retrieve the requested content. Pet. 8–19 (citing Ex. 1008, 1:4–2:3, 6:8–15, 7:1–8, 11:1–12, 12:24–13:2, 13:9–14, 14:17–15:4, 16:15–17:2, 17:20–19:6; Ex. 1008 ¶¶ 75–96, 119–140). We have reviewed Petitioner's assertions relating to limitations [1p]–[1c] and find them supported by the record. Pet. 17–19.

[1d] (c1) causing said hostname to be resolved to said common anycast address by an Internet Service Provider (ISP) DNS server

Petitioner asserts that Glines teaches an ISP DNS server in the form of local DNS resolver 18. Pet. 20. Petitioner asserts that although Glines does not expressly state that DNS resolver 18 is an ISP DNS server, a person having ordinary skill in the art "would have understood that residential users' Internet access is usually provided by an Internet service provider (ISP)." *Id.* (citing Ex. 1008 ¶¶ 147–153). Petitioner asserts that responsive to receiving a URL from a user, the local DNS resolver sends a request to root DNS server 38. *Id.* at 21 (citing Ex. 1002, 13:24–14:12). Then, DNS server 38 returns the anycast address of the name servers. *Id.* (citing Ex. 1002, 14:4–15:4). The browser or local resolver can then send a DNS request to the anycast message as a User Datagram Protocol ("UDP") datagram to resolve the content. *Id.* (citing Ex. 1002, 7:9–13). Petitioner provides an annotated Figure 1 of Glines:

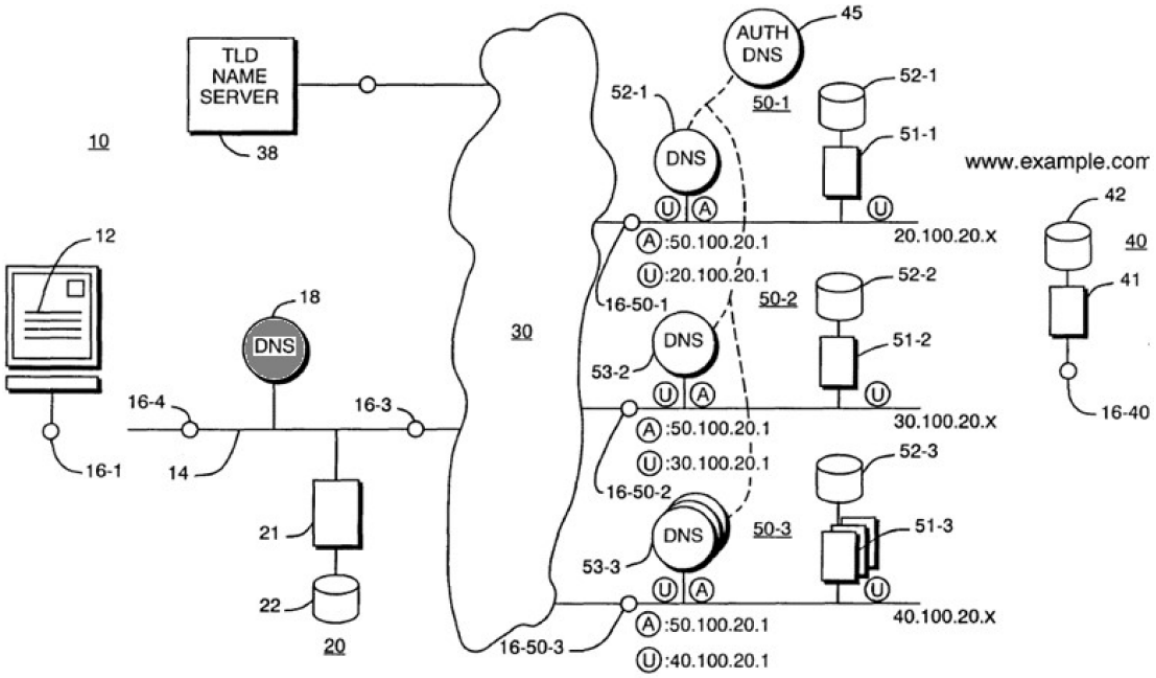

FIG. 1

Id. Annotated Figure 1 highlights local DNS resolver 18, connected to user's computer 12 and internet 30, which is connected to a TLD Name Server 38, and DNS servers 52-1 through 53–3.

Patent Owner contests Petitioner's assertions as to limitation [1d]. Prelim. Resp. 16–18. Patent Owner argues, "Petitioner relies on Glines's local DNS resolver for the claimed 'Internet Service Provider (ISP) DNS server,' but Glines's local DNS resolver does not perform any address resolution, as claim 1 requires." *Id.* at 16. Patent Owner points to Petitioner's reliance on root server 38 to "return the anycast address"; i.e., to perform the claimed resolution of the hostname to the anycast address. *Id.* at 19 (citing Pet. 20–21). Patent Owner argues that Petitioner has shown that Glines's root server 38, not Glines's local DNS resolver 18, performs the claimed resolving function. *Id.* Patent Owner argues that the failure to shown that Glines's local resolver 18 performs the claimed resolving function causes Petitioner's assertions to fail to show that limitation [1d] is taught. *Id.*

We agree with Patent Owner that Petitioner has identified Glines's root server 38, not its local resolver 18, as performing the step of "*causing said hostname to be resolved to said common anycast address*." Petitioner points to the description in Glines that "root DNS name server 38 is 'programmed to . . . return the anycast address 50.100.200.1' of name servers 53[]." Pet. 20 (citing Ex. 1002, 14:4–15:4). Petitioner's declarant, Dr. Mowry, attests that the root server 38 performs the resolution of the hostname to the anycast address, stating, "in response to the user's request, the root DNS name server 38 is 'programmed to . . . return the anycast address 50.100.20.1' of name servers 53-1, 53-2, 53-3 that 'have been

designated as being the authoritative name servers for 'example.com.'"" Ex. 1008 ¶ 138.

Petitioner does not assert that Glines's DNS server 38 is an ISP DNS server, and does not assert that DNS server 38 meets limitation [1d]. Pet. 20–22. Because Glines's local resolver 18 does not resolve a hostname to a common anycast address, it does not teach limitation [1d] regardless of whether it is an ISP DNS server, or if it would have been obvious for it to be an ISP DNS server that "perform[s] the same functions as Glines ascribes to local DNS resolver 18." Pet. 22–23. Therefore, Petitioner has not shown an entity in Glines that is an ISP DNS server that resolves a hostname to a common anycast address.

Consequently, Petitioner has not shown a reasonable likelihood of prevailing on its obviousness assertions for claim 1 based upon Glines.

3. Claims 2–12

Claims 2–12 depend from claim 1, and Petitioner's assertions suffer from the same deficiencies as its assertions for claim 1. Pet. 26–39. Petitioner's reliance on combinations of Glines with Chung (claim 4), Chiou (claims 7–9), or Colby (claims 10–12) do not cure these deficiencies. Pet. 60–66. Consequently, Petitioner has not shown a reasonable likelihood of prevailing on its obviousness assertions for claims 2–12 based upon Glines.

4. Claims 13–18, 22, and 23 ("a plurality of content providers")

Each of claims 13 (limitations [13b], [13c], [13g]), 18 (limitations [18p], [18b], [18e]), 22 (limitations [22b], [22e]), and 23 (limitations [23b], [23c], [23e]) recite a "plurality of content providers." Ex. 1001, 9:61–65, 10:42–49, 12:7–11, 12:25–39. Patent Owner argues that Petitioner does not

provide any argument for where the prior art teaches a plurality of content providers. Prelim. Resp. 17, 22. Patent Owner points to Petitioner's tables that refer to its analysis of limitation [1b], which does not recite a plurality of content providers. *Id.* at 23 (citing Pet. 41, 48, 54). Patent Owner argues that Glines is relied on for a singular content provider; e.g., www.example.com. *Id.* (citing Ex. 1002, 6:23–7:13, 13:15–15:10); *see* Ex. 1008 ¶¶ 120 ("Glines discloses 'www.example.com[]' as an exemplary hostname associated with a content provider"), 124.

With respect to claim 13, Petitioner states, "Glines expressly discloses that its system may be used with either a 'single provider' or 'multiple providers,' and thus discloses content delivery on behalf of a plurality of content providers, as claimed." Pet. 40 (citing Ex. 1002, 17:3-9; Ex. 1008 ¶¶ 258–261). Although Petitioner refers to limitation [1b] for teachings relating to [13b], we do not agree with Patent Owner that the Petition lacks argument for where the prior art teaches a plurality of content providers. Petitioner's assertions for claims 18 and 23 refer back to its assertions for claim 13; consequently, we do not agree with Patent Owner's identical argument against those assertions. Pet. 48, 54.

With respect to claim 22, Patent Owner argues that the cited portions of Glines (17:3–9) do not refer to content providers, as required by the claims, but instead to network providers. Because Petitioner bears the burden of persuasion, regardless of Patent Owner's specific arguments (or lack thereof), we consider this argument as it affects Petitioner's showing for claims 13, 18, and 23 also.

The disputed portion of Glines recites:

> The selection of routing protocol may have profound effects on the prop[a]gation and convergence of group

> membership changes. "Membership" in the group is conti[n]gent [sic] upon distributed routing state. In the case of deployment within a single provider, where the anycast routing is internal to that network (and transparent to the outside - the Internet), and an internal routing protocol like iBGP or OSPF is used, pro[po]gation [sic] of changes should be fast. In the case of deployment across *multiple providers*, full fledged external BGP ("eBGP") preferably would be used. Membership changes would be effected in such a scenario when the state change propagates at least half the way towards each other member in the anycast group, and that should cover all of external routers which would tag a particular anycast advertisement as "closest." State changes would possibly take longer, but would not require flooding over the entire Internet.

Ex. 1002, 17:3–14. Petitioner's declarant Mowry attests that the "multiple providers" refers to "content providers," providing no reasoning or evidence in support. Ex. 1008 ¶¶ 260–61. We agree with Patent Owner that it is not sufficiently established that Glines refers to content providers or network providers, because Glines discusses the actions of a network rather than content in that paragraph. Prelim. Resp. 24–25.

Dr. Mowry further attests that "A POSITA would have understood Glines's disclosure of providing content from an origin source would have included supporting more than one origin source (e.g., more than one website or content provider[)]." Ex. 1008 ¶ 262 (citing Ex. 1002, 12:11–22 (storing replica files that originate at an origin server 40), 13:21–14:3 (requesting "example.com")). That statement, however, goes only to what Glines might be capable of doing, not to whether one would have modified Glines to do so. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) ("[o]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated* to make the combinations or modifications of prior art to arrive at the claimed inventions."). Dr.

Mowry relies solely on the knowledge in the art to teach the missing "content providers" limitation, stating that it "would have been nothing more than replicating Glines's teaching of storing and providing content associated with one origin server, with expected results." Ex. 1008 ¶ 263. That statement, however, is unsupported, and moreover, does not explain how such replication would occur or what results would be expected. Prelim. Resp. 25–26. At this stage in the proceeding, Dr. Mowry's testimony amounts to a "conclusory generalization" that does not provide the "reasoned explanation" sufficient to show that a limitation missing in the cited art was taught by the knowledge in the art. *Arendi S.A.R.L v. Apple, Inc.*, 832 F.3d 1355, 1365 (Fed. Cir. 2016).

Consequently, we determine that Petitioner has not shown a reasonable likelihood that claims 13, 18, 22, and 23 would have been obvious over Glines on the preliminary record. Claims 14–17 depend from claim 13, and Petitioner's assertions suffer from the same deficiencies as its assertions for claim 13. Pet. 26–39. Thus, Petitioner has not shown a reasonable likelihood that claims 14–17 would have been obvious over Glines.

5. Claims 13–22 ("by a switch . . . selecting the first content server from [a] plurality of content servers associated with the DNS server")

Claim 13 recites, "by a switch associated with said resolving DNS server of step (c11), selecting the first content server from said respective plurality of content servers associated with the DNS server of step (c11)." Ex. 1001, 10:8–11. Claim 18 recites, "at least one switch associated with each set of content servers. . . [that] is operable to perform load balancing to select the content server from the set of content servers associated with the

resolving DNS." *Id.* at 10:53–67. Claims 19 (limitation [19f]), 21, and 22 recite similar limitations.

Petitioner, referring to its assertions for claim 11, asserts that "Glines describes a Layer 4 switch used for 'standard load balancing' among multiple content servers to apply a load balancing policy and select a content server." Pet. 38–39 (referring to Ex. 1002, 19:10-16), 41–42, 44–45. Petitioner states, "it would have been obvious [] to manage more than one request [in Glines,] including [managing] multiple requests for the same or different content" using different DNS servers. Pet. 43–44 (citing Limitation [13h]; Ex. 1008 ¶¶ 306–314).

Glines, at the section cited by Petitioner, states,

> Requests get delivered to the DNS server at the anycast address purely by the topological closeness of the requesting clients.
>
> However, within the service group, standard load balancing and replication techniques can also apply, such as multiple content servers (returning multiple local IP addresses to a name lookup), layer 4 switches, etc. Multiple DNS servers within the group all listening to the anycast address would also be possible.
>
> Load balancing across service groups requires an additional mechanism. Using a relatively standard approach, the DNS server in the service group can advertise a load metric to other service groups, and it can measure the load of the local content servers. When local load reached some watermark, it can load shed to content servers in other service groups by returning their IP address to name lookups coming at the anycast address.

Ex. 1002, 19:11–22.

Petitioner's declarant Dr. Mowry attests that Layer 4 switches distribute load across many servers. Ex. 1008 ¶ 243 (citing Exs. 1017, 1026). Dr. Mowry describes Level 4 switches as balancing load across

server hosts by "providing a mapping from a single host name to multiple IP addresses." *Id.* (citing Ex. 1026, 2–3). Dr. Mowry provides an example in which Glines's name server 53 responds with the "unique IP address of its associate replica content server 51" having the requested content. *Id.* ¶ 250 (citing Ex. 1002, 15:26–16:2). Dr. Mowry further attests that Glines describes a service group as "a peered name server 53 and its content servers"; i.e., having multiple servers within a service group. *Id.* ¶ 251 (citing Ex. 1002, 18:17–19 as describing "content servers 'in the service group'").

We determine that Glines supports Petitioner's assertion that a service group may contain multiple content servers with a single name server. For example, Glines states that when a DNS host fails, but the content servers in the service group are functioning, clients who have resolved the service name into a local IP address would continue to get service. Ex. 1002, 18:12–19. Because the service group may contain multiple content servers, Glines's description of standard load balancing techniques applies to the content servers within that service group. *Id.* at 19:13–15.

Patent Owner argues that such load balancing is accomplished by returning multiple local IP addresses to a name lookup. Prelim. Resp. 27 (citing Ex. 1002, 19:13–16). However, Glines describes this as one of two alternative methods of load balancing, with the other being "layer 4 switches." Ex. 1002, 19:13–16. Thus, we determine that Petitioner has persuasively shown that Glines describes layer 4 switches as a method for selecting a content server within a service group.

Therefore, Petitioner has shown Glines to teach limitation [19f]. We have reviewed Petitioner's additional Glines-based assertions for claims 19–20, and determine that not all are supported by the current record.

Pet. 50–51. Claim 19 includes limitations [19p]–[19a] and [19c]–[19d] that are substantively identical to limitations [1p]–[1c], and for which we have determined to be shown to be taught by Glines. *Supra* § II.2. Petitioner's assertions for limitations [19b] and 19[e], are supported by the record. Pet. 25–28 (Glines's DNS server-adjacent router connections of networks teach the claimed network point of presences), 33 (Glines's closest name server 53, one of the plurality of CDN DNS servers, "will then respond by reporting the unique IP address of its associated replica content server 51," thereby teaching a CDN DNS server that resolves the hostname to identify an IP address for use by the client to retrieve the content from a content server). Claim 20 requires a "load balancing policy," which we have determined Glines to teach in our above discussion of balancing load between content servers.

However, Petitioner's assertions for limitations [19g] and [19h] are not persuasive. Limitations [19g] and [19h] recite, "(D) by the content server, (d1) attempting to serve the content by: (d11) if a valid version of the content is available on the content server, serving the content; otherwise (d12) obtaining the content from a content source and then serving the content." Ex. 1001, 25–29. Petitioner asserts that Glines's content server returns the requested file; i.e., attempting to serve the content and serving the available content. Pet. 33–34 (citing Ex. 1002, 15:21–16:8). Petitioner further asserts that Glines "would have understood the benefits of obtaining unavailable content at a user's request, including distributing content across Glines's system to fulfill current and future requests for content." Pet. 34–35. However, Petitioner does not explain what those benefits are or what modification is being suggested to Glines to teach the "otherwise . . . obtaining the content from a content source and then serving the content"

limitation. Consequently, Petitioner has not shown a reasonable likelihood that it will prevail on its obviousness assertion for claim 19 or its dependent claim 20.

Claim 21 has substantively identical limitations to [1p]–[1c], [19e], and [19f], which we have determined to be taught by Glines. Pet. 51–52. Consequently, Petitioner has shown a reasonable likelihood that it will prevail on its obviousness assertion for claim 21.

6. Conclusion

In summary, Petitioner has not shown that Glines teaches "causing said hostname to be resolved to said common anycast address by an Internet Service Provider (ISP) DNS server" as required by claims 1–12. Petitioner has not shown that Glines teaches "a plurality of content providers" as required by claims 13–18, 22, and 23. Petitioner has shown that Glines teaches "by a switch . . . selecting the first content server" (or equivalent) as required by claims 13–22. Petitioner has not shown that Glines teaches "otherwise . . . obtaining the content from a content source and then serving the content" as recited in claim 19 and by dependency, claim 20. Petitioner has shown that Glines teaches each limitation of claim 21. For the above described reasons, Petitioner has shown a reasonable likelihood of success in showing that claim 21 would have been obvious over Glines, but has not shown a reasonable likelihood of success in showing any of claims 1–20 or 22–23 would have been obvious over Glines.

E. Obviousness over Glines and Gupta

In this ground, Petitioner relies on Glines for the same teachings as in its Glines-only assertions, except as discussed below. Pet. 7–80.

1. Gupta

Gupta is titled, "Integrated Point of Presence Server Network." Ex. 1003, code [54]. Gupta describes a network of point of presence ("POP") servers sharing a hostname. *Id.* at code [57]. Gupta's network includes multiple customers (customer1.com and customer2.com) connected through routers and the Internet to nameservers attached to webservers and webcaches. *Id.* at Fig. 1. Gupta's network addresses integrated load balancing to reduce latency while providing static content to a user. *Id.* at 3:26–51.

2. Claims 1–12

Claim limitation [1d] recites, "causing said hostname to be resolved to said common anycast address by an Internet Service Provider (ISP) DNS server."

Petitioner asserts that it would have been obvious to use Gupta's client DNS server, part of ISP 60, instead of Glines's local DNS resolver 18. Pet. 22. Petitioner asserts that such a modified server would "perform the same functions as Glines ascribes to local DNS resolver 18," that is, "resolving a host name into an IP address." Pet. 23–24. Petitioner further asserts that such a combination "would not alter the features of Glines discussed elsewhere in this petition." *Id.* at 25.

Patent Owner argues that even so, the functions of DNS resolver 18 do not include causing the resolution of the hostname to the anycast address. Prelim. Resp. 20–21. Patent Owner states, "unlike Gupta's 'client DNS server 170' that is used 'to resolve a host name into an IP address,' Glines's 'local resolver 18' is designed to determine whether requested content is

available locally—not to resolve host names." *Id.* at 21 (citing Ex. 1003, 6:4–9).

As discussed *supra*, local DNS resolver 18 does not resolve a hostname into an anycast address. *Supra* § II.D.2. Petitioner's proposal to substitute Gupta's ISP resolver "to perform the same function as Glines ascribes to local DNS resolver 18," does not cure this deficiency because the function of Glines's DNS resolver 18 is not to resolve a hostname into an anycast address. Nor does Gupta teach anycast, so its DNS server, like Glines's, does not resolve a hostname to an anycast address. *See* Ex. 2013 ¶¶ 60 ("rather than sending an anycast UDP message like Glines, Gupta's DNS servers are directly contacted via unicast."), 64 ("Gupta teaches away from the use of anycast addressing, relying instead on load monitoring and load balancing."). Consequently, Petitioner's asserted combination does not teach limitation [1d].

Claims 2–12 depend from claim 1, and Petitioner's assertions suffer from the same deficiencies as its assertions for claim 1. Pet. 26–39. Petitioner's reliance on combinations of Glines with Chung (claim 4), Chiou (claims 7–9) do not cure these deficiencies. Pet. 60–66. Consequently, Petitioner has not shown a reasonable likelihood of prevailing on its obviousness assertions for claims 1–12 based upon Glines and Gupta.

3. Claims 13–18, 22, and 23 ("a plurality of content providers")

Petitioner asserts that a person having ordinary skill in the art would have looked to Gupta's teachings of a plurality of content providers, and combined them with the teachings of Glines. Pet. 39–41. Petitioner asserts that Gupta teaches multiple content providers, including "customer1 and customer2." *Id.* (citing Ex. 1003 7:8–20). Petitioner's assertions are

supported by Gupta, which describes such customers as relating to websites, e.g., "customer1.com." Ex. 1003, 8:53–59; Ex. 1008 ¶ 266 ("'customers' --plural--can store content 'such as HTML, images, video, sound, software, or the like on the network for fast and highly available access by clients (end users).'") (citing Ex. 1003, 2:9–17).

Patent Owner does not dispute that this combination would teach the claim limitations. *See* Prelim. Resp. 22–26 (addressing Glines only). We determine that Petitioner's assertions are supported by the preliminary record. Instead, Patent Owner argues against Petitioner's motivation to combine Gupta's teachings with those of Glines. Prelim. Resp. 28–33.

Petitioner asserts that it would have been obvious to have applied Gupta's teachings to store and provide content from multiple content providers (e.g., multiple websites) as combining known element in the prior arts according to understood principles. Pet. 40–41; Ex. 1008 ¶ 267. Petitioner asserts that such a combination would "maximize the usefulness and value of Glines's system by providing Glines's service to more than one customer/content provider." Pet. 41 (quoting Ex. 1008 ¶ 267). Petitioner further points to the similarities of the two references, stating, "both disclose DNS servers and associated content servers that are connected to a network and function together to resolve hostnames and deliver content." *Id.* at 7 (citing Ex. 1008 ¶¶ 68–71). Petitioner further states that the combination "appl[ies] Gupta's use of multiple WebCache servers with each name server to Glines to yield a system with multiple content servers for each name server." *Id.* at 8.

Patent Owner argues that Petitioner has not shown why a person having ordinary skill in the art would have combined Glines and Gupta, how the combination would operate, or why the combination would be

successful. Prelim. Resp. 30. Specifically, Patent Owner argues that the Petition does not supply a reason "to replace or augment Glines's anycast addressing and peered DNS and file server techniques with Gupta's disparate load allocation techniques." *Id.* at 33 (citing Pet. 7–8; Ex. 1008 ¶¶ 68–72).

Patent Owners' argument concerning replacement of addressing and file server techniques with Gupta's load balancing techniques does not address the specific combination asserted for limitation [13b]. Although Petitioner applies Gupta's multiple WebCache servers to each name server of Glines, Gupta's WebCache servers merely handle requests for content received from its name servers. Ex. 1003, 11:46–59 ("WebCache . . . access[es] NameServers to find services on the . . . network"). Petitioner does not assert that Gupta's NameServers or DNS, which perform its load allocation, should be part of the applied combination. Pet. 8, 15–16; Ex. 1003, 9:1–5, 12:13–63; *see* Ex. 2013 ¶ 61 ("NameServer server 110 typically uses the latency and traffic load information associated with the customer's web sites that was determined in step 390, to select an appropriate customer web server to return to the user, step 440."). Although Dr. Russ attests that Glines and Gupta "disclose fundamentally different architectures and techniques for accomplishing content delivery," Dr. Russ does not address the combinability of Gupta's WebCache servers with Glines's system to accommodate additional content providers. Ex. 2013 ¶¶ 57–63.

Petitioner's asserted advantage is "providing Glines's service to more than one customer/content provider." Ex. 1008 ¶ 267. This asserted advantage is supported in the record, and by Petitioner's reasoned explanation.

Consequently, we determine that Petitioner has shown persuasive reason to have combined Petitioner's relied-upon teachings of Glines and Gupta to teach a plurality of content providers as recited in claims 13, 18, 22, 23, and through dependency, claims 14–17.

With respect to claim 23, we determine that Petitioner has shown the teaching of limitations [23p]–[23b], [23d], and [23f]. Pet. 54–58. We question, however, Petitioner's reliance on the knowledge in the art to teach limitations [23c] and [23e]. For those limitations, Petitioner relies on a specific example of the "Yahoo! News" website, as an "obvious application of Glines's system," pointing to a first request to the website and a second request to a particular article via that website. Pet. 55–57. Petitioner does not explain how this example indicates that such teachings of first and second requests were "within the common knowledge of those skilled in the art." *See K/S Himpp v. Hear-Wear Techs.*, LLC, 751 F.3d 1362, 1365–66 (Fed. Cir. 2014); *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362–1363 (Fed. Cir. 2013) (finding persuasive "a party's claim about what one of ordinary skill in the relevant art would have known" when the party "established [it as] a prevalent, perhaps even predominant method" by "citing to extensive references of record"). Petitioner has not provided sufficient support or explanation as to why this particular example represents the general knowledge in the art, rather than a singular feature of an individual website, such that it would have been considered to be "a known prior art technique" that would be applied with "predictable results." Pet. 55. Nor has Petitioner included any particular prior art describing this example as part of the asserted ground.

4. Claims 13–22 ("switch")

We have determined that Petitioner has shown Glines to teach the "switch" limitations of claims 13, 18, 19, and 22. *Supra* § II.D.5.

As discussed *supra*, we have determined that Petitioner has shown Glines to teach the remaining limitations of claim 21 sufficiently for purposes of institution on the current record. *Supra* § II.D.5.

With respect to claim 19, we are persuaded by Petitioner that Glines, in combination with the teaching of Gupta of determining if requested content does not exist on a content server, and then generating a request to return the content, teaches the portions of limitations [19g] and [19h] not taught by Glines. Pet. 35–36 (citing Ex. 1003, 5:16–40, 13:23–30, Fig. 4). Consequently Petitioner has shown Glines in view of Gupta to teach each limitation of claim 19 and its dependent claim 20 sufficiently for purposes of institution on the current record.

With respect to claim 13, we have further determined that Glines combined with Gupta teaches a plurality of content providers [13p], and limitations [13a]–[13f] that are substantively identical to limitations [1a]–[1c] and [19e]–[19g]. Pet. 39–42; *Supra* § II.D.5. We find Petitioner's assertions for limitations [13g]–[13j], based on the obviousness of repeating Glines's content request and delivery process, supported by the current record sufficiently for purposes of institution. Pet. 42–46.

We further find Petitioner's further assertions for the limitations of claims 14–18 and 22, to the extent that they have not been addressed in other previously-discussed limitations, are supported by the current record sufficiently for purposes of institution. Pet. 47–49, 51–53.

5. Conclusion

For the reasons described above, we determine that Petitioner has shown a reasonable likelihood that it will prevail on its obviousness assertions for claims 13–22 based upon the combined teachings of Glines and Gupta, but not on its obviousness assertions for claims 1–12 or 23.

III. CONCLUSION

For the reasons discussed above, we conclude Petitioner has shown a reasonable likelihood of prevailing with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review of asserted claims 1–23 on all asserted grounds. 37 C.F.R. § 42.108(a) ("When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim."); *see SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (noting that the language of 35 U.S.C. § 314(b) "indicates a binary choice—either institute review or don't"); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute as requiring "a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition").

Our determination at this stage of the proceeding is based on the evidentiary record currently before us. This decision to institute trial is not a final decision as to patentability of any claim for which an *inter partes* review has been instituted. Our final decision will be based on the full record developed during trial.

IV. ORDER

For the foregoing reasons, it is:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted for all asserted grounds on all asserted claims, i.e.:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–8, 10–23	103(a)	Glines
1–8, 10–23	103(a)	Glines, Gupta
4	103(a)	Glines, Chung
4	103(a)	Glines, Gupta, Chung
7–9, 19–20	103(a)	Glines, Chiou
7–9, 19–20	103(a)	Glines, Gupta, Chiou
10–22	103(a)	Glines, Colby
10–22	103(a)	Glines, Gupta, Colby
19–20	103(a)	Glines, Chiou, Colby
19–20	103(a)	Glines, Gupta, Chiou, Colby

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this Decision.

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